WE CLAIM:

1. A thin film transistor comprising:

an insulating layer;

a gate electrode;

a semiconductor layer including coalesced structurally ordered polymer aggregates of a self-organizable polymer, wherein the self-organizable polymer is of a type capable of gelling;

a source electrode; and

a drain electrode,

wherein the insulating layer, the gate electrode, the semiconductor layer, the source electrode, and the drain electrode are in any sequence as long as the gate electrode and the semiconductor layer both contact the insulating layer, and the source electrode and the drain electrode both contact the semiconductor layer.

2. The thin film transistor of claim 1, wherein the self-organizable polymer is a conjugated polymer.

3. The thin film transistor of claim 1, wherein the self-organizable polymer is a polythiophene.

4. The thin film transistor of claim 1, wherein the self-organizable polymer includes at least two different polymers.

5. The thin film transistor of claim 1, wherein prior to coalescence the polymer aggregates have a size ranging from about 10 nm to about 500 nm.

6. The thin film transistor of claim 1, wherein the semiconductor layer has a carrier mobility greater than about 10^{-3} cm^2/Vs and a conductivity less than about 10^{-5} S/cm.

7. The thin film transistor of claim 1 has an on/off ratio greater than about 10^4 at 20 degrees C.

8. The thin film transistor of claim 1, wherein the semiconductor layer has a dry thickness ranging from about 10 nm to about 1 micrometer.

9. The thin film transistor of claim 1, wherein the source electrode has a thickness ranging from about 40 nm to about 1 micrometer.

10. The thin film transistor of claim 1, wherein the insulating layer comprises an inorganic material.

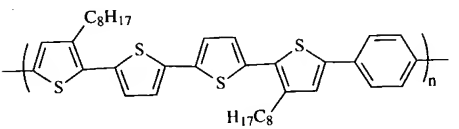
11. The thin film transistor of claim 1, wherein the insulating layer comprises an organic polymer.

12. The thin film transistor of claim 1, wherein a layer of a composition including the polymer aggregates and a liquid is solution coated at a temperature ranging from about 10 to about 40 degrees C and then at least partially dried to result in the semiconductor layer.

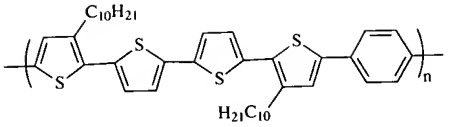
13. The thin film transistor of claim 1, wherein a layer of a composition including the polymer aggregates and a liquid is solution coated at a temperature ranging from about 20 to about 30 degrees C and then at least partially dried to result in the semiconductor layer.

14. The thin film transistor of claim 1, wherein a layer of a composition including the polymer aggregates and a liquid is solution coated at room temperature and then at least partially dried to result in the semiconductor layer.

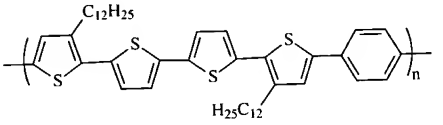
15. The thin film transistor of claim 1, wherein the self-organizable polymer is a polythiophene selected from the group consisting of:



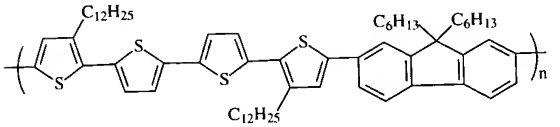
(I)


C10H21
S
S
S
S
H21C10
n

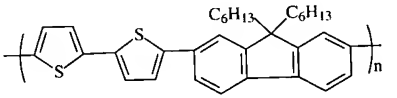
(2)


C12H25
S
S
S
S
H25C12
n

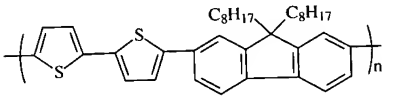
(3)


C12H25
C6H13
C6H13
S
S
S
S
C12H25
n

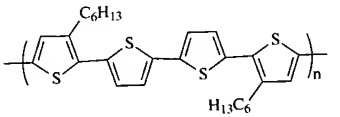
(4)


C6H13
C6H13
S
S
n

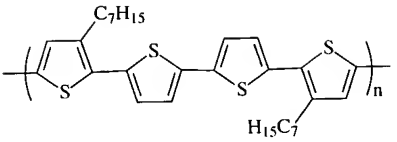
(5)


C8H17
C8H17
S
S
n

(6)


C6H13
S
S
S
S
H13C6
n

(7)



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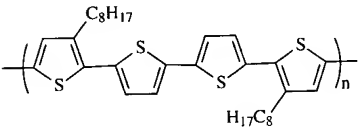

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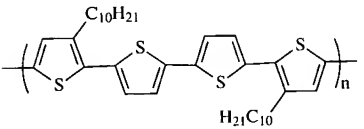
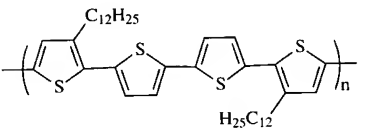
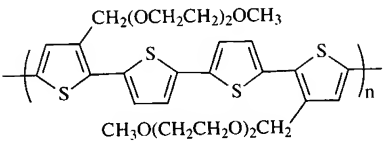


(10)



(11)



(12)

or mixtures thereof, where n is from about 5 to about 5,000.